

AMENDMENTS TO THE CLAIMS:

The following listing of claims replaces all prior listings, and all prior versions, of claims in the application.

LISTING OF CLAIMS:

1. (Currently Amended) An optical element formed by molding a molding material, wherein the molding material is a pseudo cross-link resin composition comprising at least two polymers;

wherein the resin composition is obtained by mixing a polymer A that has an atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain and/or at a molecular tail end of the polymer molecule, and a polymer B that has an atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain ~~and/or in a molecular skeleton~~ of the polymer molecule;

wherein the polymer A that has an atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain and/or at a molecular tail end is a vinylic polymer and/or copolymer that has a carboxyl group in a molecular side chain and/or at a molecular tail end, and the polymer B that has the atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain ~~and/or in a molecular skeleton~~ is a vinylic polymer and/or copolymer having at least one nitrogen atom contained in an amino group, an amide group or a group consisting of a pyridine unit in a molecular side chain ;

wherein the amount of a monomer containing a carboxyl group is in a range of from 2 mol% to 50 mol% based on the total monomers of the polymer A, and the amount of a monomer having the nitrogen atom is in a range of from 2 mol% to 50 mol% based on the total monomers of the polymer B; and

wherein when the polymer A and the polymer B or copolymers thereof are mixed together, the intermolecular hydrogen bond is formed therebetween.

2. (Currently Amended) An optical element formed by molding a film obtained from a pseudo cross-link resin composition comprising at least two polymers;

wherein the resin composition is obtained by mixing a polymer A that has an atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain and/or at a molecular tail end of the polymer molecule, and a polymer B that has an atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain ~~and/or in a molecular skeleton~~ of the polymer molecule;

wherein the polymer A that has an atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain and/or at a molecular tail end is a vinylic polymer and/or copolymer that has a carboxyl group in a molecular side chain and/or at a molecular tail end, and the polymer B that has the atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain ~~and/or in a molecular skeleton~~ is a vinylic polymer and/or copolymer having at least one nitrogen atom contained in an amino group, an amide group or a group consisting of a pyridine unit in a molecular side chain ;

wherein the amount of a monomer containing a carboxyl group is in a range of from 2 mol% to 50 mol% based on the total monomers of the polymer A, and the amount of a monomer having the nitrogen atom is in a range of from 2 mol% to 50 mol% based on the total monomers of the polymer B; and

wherein when the polymer A and the polymer B or copolymers thereof are mixed together, the intermolecular hydrogen bond is formed therebetween.

3. (Currently Amended) An optical element formed by molding a sheet obtained from a pseudo cross-link resin composition comprising at least two polymers;

wherein the resin composition is obtained by mixing a polymer A that has an atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain and/or at a molecular tail end of the polymer molecule, and a polymer B that has an atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain ~~and/or in a molecular skeleton~~ of the polymer molecule;

wherein the polymer A that has an atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain and/or at a molecular tail end is a vinylic polymer and/or copolymer that has a carboxyl group in a molecular side chain and/or at a molecular tail end, and the polymer B that has the atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain ~~and/or in a molecular skeleton~~ is a vinylic polymer and/or copolymer having at least one nitrogen atom contained in an amino group, an amide group or a group consisting of a pyridine group in a molecular side chain ;

wherein the amount of a monomer containing a carboxyl group is in a range of from 2 mol% to 50 mol% based on the total monomers of the polymer A, and the amount of a monomer having the nitrogen atom is in a range of from 2 mol% to 50 mol% based on the total monomers of the polymer B; and

_____ wherein when the polymer A and the polymer B or copolymers thereof are mixed together, the intermolecular hydrogen bond is formed therebetween.

4. (Currently Amended) ~~The~~ An optical element form by molding a molding material ~~according to claim 1, wherein the molding material is a pseudo cross-link resin composition at least two polymers,~~

wherein the resin composition is obtained by mixing a polymer A that has an atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain and/or at a molecular tail end of the polymer molecule, and a polymer B that has an atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain of the polymer molecule;

wherein the polymer A that has an atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain and/or at a molecular tail end is a vinylic polymer and/or copolymer that has a carboxyl group in a molecular side chain and/or at a molecular tail end, and the polymer B that has the atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain is a vinylic polymer and/or copolymer having at least one nitrogen atom in a molecular side chain ;

wherein the amount of a monomer containing a carboxyl group is in a range of from 2 mol% to 50 mol% based on the total monomers of the polymer A, and the amount of a monomer having the nitrogen atom is in a range of from 2 mol% to 50 mol% based on the total monomers of the polymer B;

wherein when the polymer A and the polymer B or copolymers thereof are mixed together, the intermolecular hydrogen bond is formed therebetween; and

wherein the monomer having the nitrogen atom is selected from the group consisting of dimethyl amino ethyl acrylate, diethyl amino ethyl acrylate, dimethyl amino ethyl acrylate, dimethyl amino ethyl methacrylate, diethyl amino ethyl methacrylate, dimethyl amino ethyl methacrylate, acrylamide, methacrylamide, N-

dimethyl acrylamide, N-diethyl acrylamide, N-dimethyl methacrylamide and N-diethyl methacrylamide.

5. (Previously Presented) The optical element formed by molding a molding material according to claim 1, wherein the monomer containing the carboxyl group is acrylic acid or methacrylic acid.

6. (Previously Presented) The optical element formed by molding a molding material according to claim 1, wherein a total light transmittance is more than 90% and an absolute value of a refractive index is less than 0.8, evaluated at room temperature in a wave length range of 400 to 800nm for the optical element molded into a 50 μ m thick film.

7. (Currently Amended) ~~The An~~ optical element formed by molding a molding material according to claim 4,
wherein the molding material is a pseudo cross-link resin composition comprising at least two polymers,
wherein the resin composition is obtained by mixing a polymer A that has an atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain and/or at a molecular tail end of the polymer molecule, and a polymer B that has an atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain of the polymer molecule;
wherein the polymer A that has an atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain and/or at a molecular tail end is a vinylic polymer and/or copolymer that has a carboxyl group in a molecular

side chain and/or at a molecular tail end, and the polymer B that has the atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain is a vinylic polymer and/or copolymer having at least one nitrogen atom in a molecular side chain ;

_____ wherein the amount of a monomer containing a carboxyl group is in a range of from 2 mol% to 50 mol% based on the total monomers of the polymer A, and the amount of a monomer having the nitrogen atom is in a range of from 2 mol% to 50 mol% based on the total monomers of the polymer B;

_____ wherein when the polymer A and the polymer B or copolymers thereof are mixed together, the intermolecular hydrogen bond is formed therebetween; and

_____ wherein Tg of one of the polymer A and the polymer B is 10 °C or less, and Tg of the other of the polymer A and the polymer B is 50 °C or more.

8. (Previously Presented) The optical element formed by molding a molding material according to claim 1, wherein the polymer A has a weight average molecular weight in a range of 10,000 to 1,000,000, and wherein the polymer B has a weight average molecular weight in a range of 10,000 to 1,000,000.

9. (Previously Presented) The optical element formed by molding a molding material according to claim 1, wherein the amount of the monomer containing the carboxyl group is in a range of 5 mol% to 50 mol% based on the total monomers of the polymer A, and the amount of the monomer having the nitrogen atom is in a range of 5 mol% to 50 mol% based on the total monomers of the polymer B.

10. (Previously Presented) The optical element formed by molding a molding material according to claim 1, wherein Tg of one of polymer A and polymer B is 25 °C or less.

11. (Previously Presented) The optical element formed by molding a molding material according to claim 1, wherein the polymer A and the polymer B are mixed at a mole ratio of 2/1 to 1/2.

12. (Currently Amended) ~~The~~An optical element formed by molding a film obtained from a pseudo cross-link resin composition comprising at least two polymers ~~according to claim 2,~~

wherein the resin composition is obtained by mixing a polymer A that has an atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain and/or at a molecular tail end of the polymer molecule, and a polymer B that has an atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain of the polymer molecule;

wherein the polymer A that has an atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain and/or at a molecular tail end is a vinylic polymer and/or copolymer that has a carboxyl group in a molecular side chain and/or at a molecular tail end, and the polymer B that has the atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain is a vinylic polymer and/or copolymer having at least one nitrogen atom in a molecular side chain;

wherein when the polymer A and the polymer B or copolymers thereof are mixed together, the intermolecular hydrogen bond is formed therebetween; and

_____ wherein the monomer having the nitrogen atom is selected from a group consisting of dimethyl amino ethyl acrylate, diethyl amino ethyl acrylate, ~~dimethyl amino ethyl acrylate~~, dimethyl amino ethyl methacrylate, diethyl amino ethyl methacrylate, ~~dimethyl amino ethyl methacrylate~~, acrylamide, methacrylamide, N-dimethyl acrylamide, N-diethyl acrylamide, N-dimethyl methacrylamide and N-diethyl methacrylamide.

13. (Previously Presented) The optical element formed by molding a film obtained from a pseudo cross-link resin composition comprising at least two polymers according to claim 2, wherein the monomer containing the carboxyl group is acrylic acid or methacrylic acid.

14. (Previously Presented) The optical element formed by molding a film obtained from a pseudo cross-link resin composition comprising at least two polymers according to claim 2, wherein a total light transmittance is more than 90%, and an absolute value of a refractive index is less than 0.8, evaluated at room temperature in a wave length range of 400 to 800nm for the optical element molded into a 50 μm thick film.

15. (Currently Amended) ~~The~~ An optical element formed by molding a film obtained from a pseudo cross-link resin composition comprising at least two polymers according to claim 2,

_____ wherein the resin composition is obtained by mixing a polymer A that has an atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain and/or at a molecular tail end of the polymer molecule, and a polymer B

that has an atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain of the polymer molecule;

wherein the polymer A that has an atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain and/or at a molecular tail end is a vinylic polymer and/or copolymer that has a carboxyl group in a molecular side chain and/or at a molecular tail end, and the polymer B that has the atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain is a vinylic polymer and/or copolymer having at least one nitrogen atom in a molecular side chain ;

wherein the amount of a monomer containing a carboxyl group is in a range of from 2 mol% to 50 mol% based on the total monomers of the polymer A, and the amount of a monomer having the nitrogen atom is in a range of from 2 mol% to 50 mol% based on the total monomers of the polymer B;

wherein when the polymer A and the polymer B or copolymers thereof are mixed together, the intermolecular hydrogen bond is formed therebetween; and

wherein Tg of one of the polymer A and the polymer B is 10°C or less, and Tg of the other of the polymer A and the polymer B is 50°C or more.

16. (Currently Amended) ~~The~~An optical element formed by molding a sheet obtained from a pseudo cross-link resin composition comprising at least two polymers ~~according to claim 3,~~

wherein the resin composition is obtained by mixing a polymer A that has an atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain and/or at a molecular tail end of the polymer molecule, and a polymer B

that has an atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain of the polymer molecule;

wherein the polymer A that has an atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain and/or at a molecular tail end is a vinylic polymer and/or copolymer that has a carboxyl group in a molecular side chain and/or at a molecular tail end, and the polymer B that has the atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain is a vinylic polymer and/or copolymer having at least one nitrogen atom in a molecular side chain ;

wherein the amount of a monomer containing a carboxyl group is in a range of from 2 mol% to 50 mol% based on the total monomers of the polymer A, and the amount of a monomer having the nitrogen atom is in a range of from 2 mol% to 50 mol% based on the total monomers of the polymer B;

wherein when the polymer A and the polymer B or copolymers thereof are mixed together, the intermolecular hydrogen bond is formed therebetween; and

wherein the monomer having the nitrogen atom is selected from the group consisting of dimethyl amino ethyl acrylate, diethyl amino ethyl acrylate, dimethyl amino ethyl acrylate, dimethyl amino ethyl methacrylate, diethyl amino ethyl methacrylate, dimethyl amino ethyl methacrylate, acrylamide, methacrylamide, N-dimethyl acrylamide, N-diethyl acrylamide, N-dimethyl methacrylamide and N-diethyl methacrylamide.

17. (Previously Presented) The optical element formed by molding a sheet obtained from a pseudo cross-link resin composition comprising at least two

polymers according to claim 3, wherein the monomer containing the carboxyl group is acrylic acid or methacrylic acid.

18. (Previously Presented) The optical element formed by molding a sheet obtained from a pseudo cross-link resin composition comprising at least two polymers according to claim 3, wherein a total light transmittance is more than 90%, and an absolute value of a refractive index is less than 0.8, evaluated at room temperature in a wave length range of 400 to 800 nm for the optical element molded into a 50 μm thick film.

19. (Currently Amended) ~~The~~An optical element formed by molding a sheet obtained from a pseudo cross-link resin composition comprising at least two polymers ~~according to claim 3,~~

wherein the resin composition is obtained by mixing a polymer A that has an atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain and/or at a molecular tail end of the polymer molecule, and a polymer B that has an atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain of the polymer molecule;

wherein the polymer A that has an atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain and/or at a molecular tail end is a vinylic polymer and/or copolymer that has a carboxyl group in a molecular side chain and/or at a molecular tail end, and the polymer B that has the atomic group capable of forming an intermolecular hydrogen bond in a molecular side chain is a vinylic polymer and/or copolymer having at least one nitrogen atom in a molecular side chain ;

_____ wherein the amount of a monomer containing a carboxyl group is in a range of
from 2 mol% to 50 mol% based on the total monomers of the polymer A, and the
amount of a monomer having the nitrogen atom is in a range of from 2 mol% to 50
mol% based on the total monomers of the polymer B;

_____ wherein when the polymer A and the polymer B or copolymers thereof are
mixed together, the intermolecular hydrogen bond is formed therebetween; and

_____ wherein Tg of one of the polymer A and the polymer B is 10°C or less, and Tg
of the other of the polymer A and the polymer B is 50°C or more.